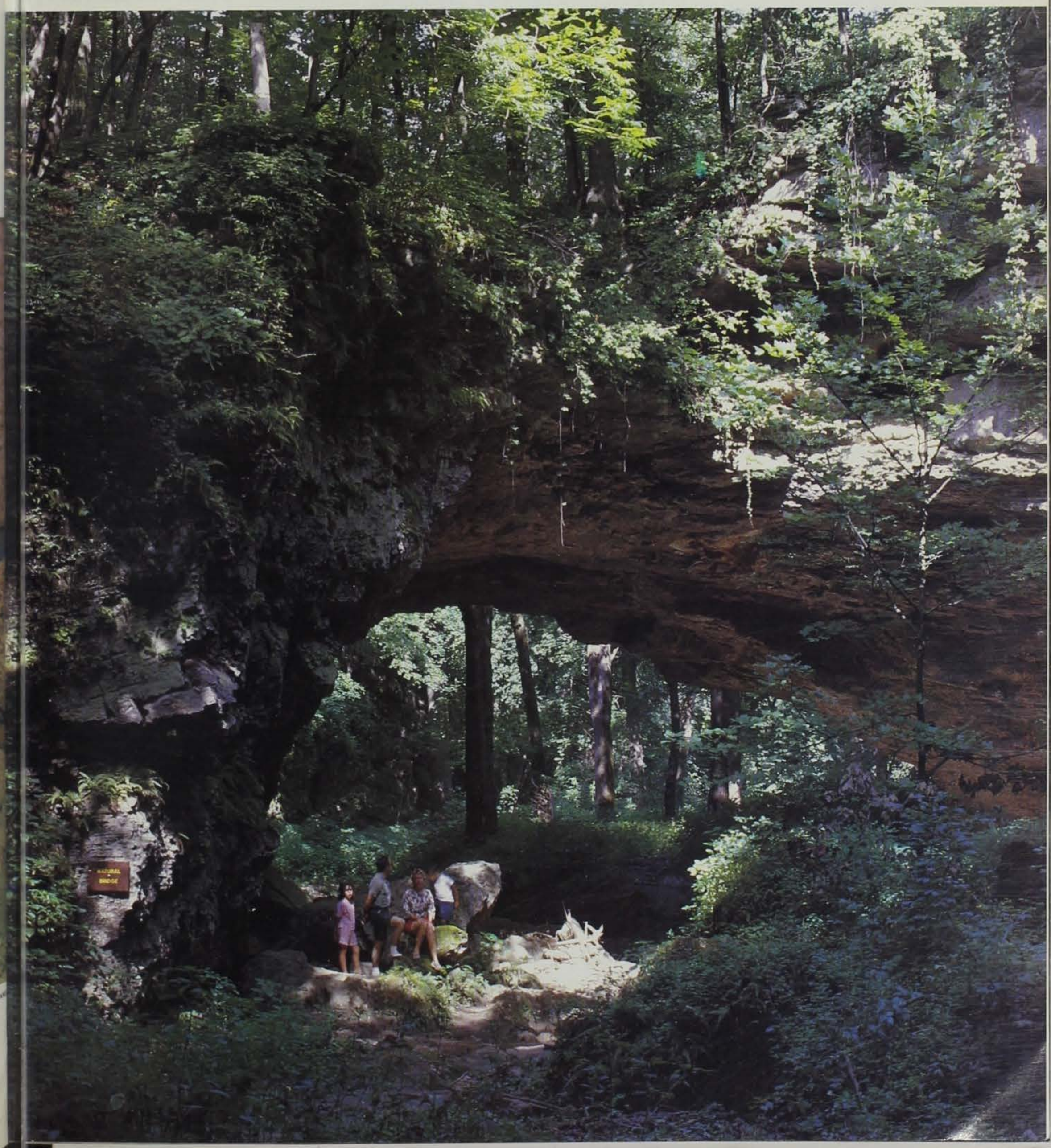
# Iowa CONSERVATIONIST

JULY 1981





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**FRONT COVER:** Natural arch at Maquoketa Caves State Park.
**BACK COVER:** Tree Frog. Photo by Jerry Leonard.



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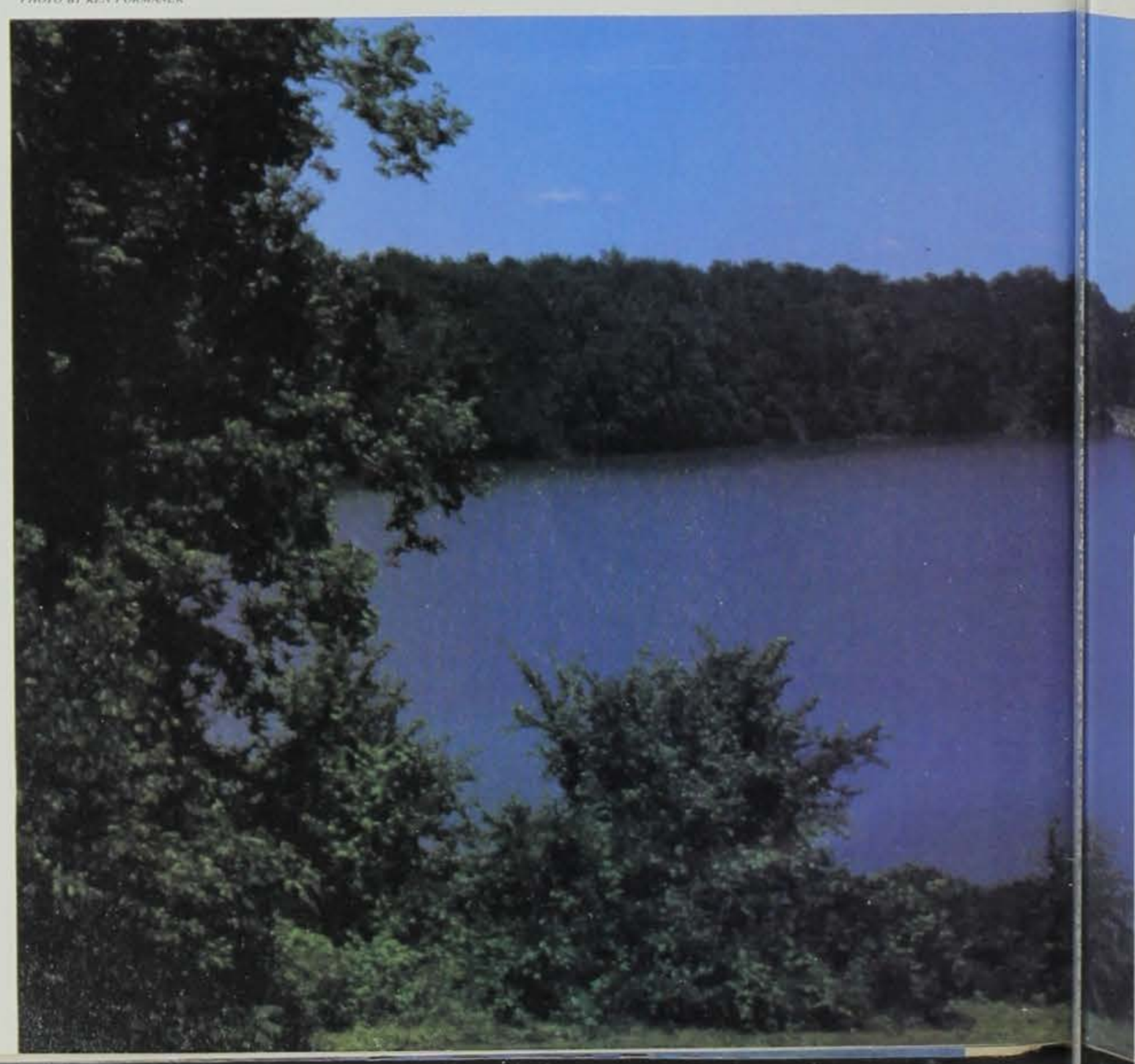
# Clean Lakes For IOWANS

by Daniel R. Landon

CLEAR WATER . . . blue reflections . . . a healthy aquatic environment. These are qualities everyone wants in a lake. So, several state agencies are participating in a program to help provide these characteristics in Iowa. The Clean Lakes Program is a project involving several federal and state agencies in a cooperative effort to improve those Iowa lakes with potentially high public use which are currently plagued with water quality problems. The U.S. Environmental Protection Agency, the Iowa Department of Environmental Quality, the Iowa Conservation Commission, and the Iowa Department of Soil Conservation are all working together to benefit the public by bettering the water quality of Iowa's problem lakes.

The Iowa Clean Lakes program has its roots in the federal Clean Water Act. This act allows the U.S. Environmental Protection Agency (EPA) to help fund state efforts to restore problem lakes. The EPA has created specific guidelines

PHOTO BY KEN FORMANEK



f states to follow in order to receive federal monies. These guidelines are designed to insure that monies are provided for restoring those lakes most in need of water quality management.

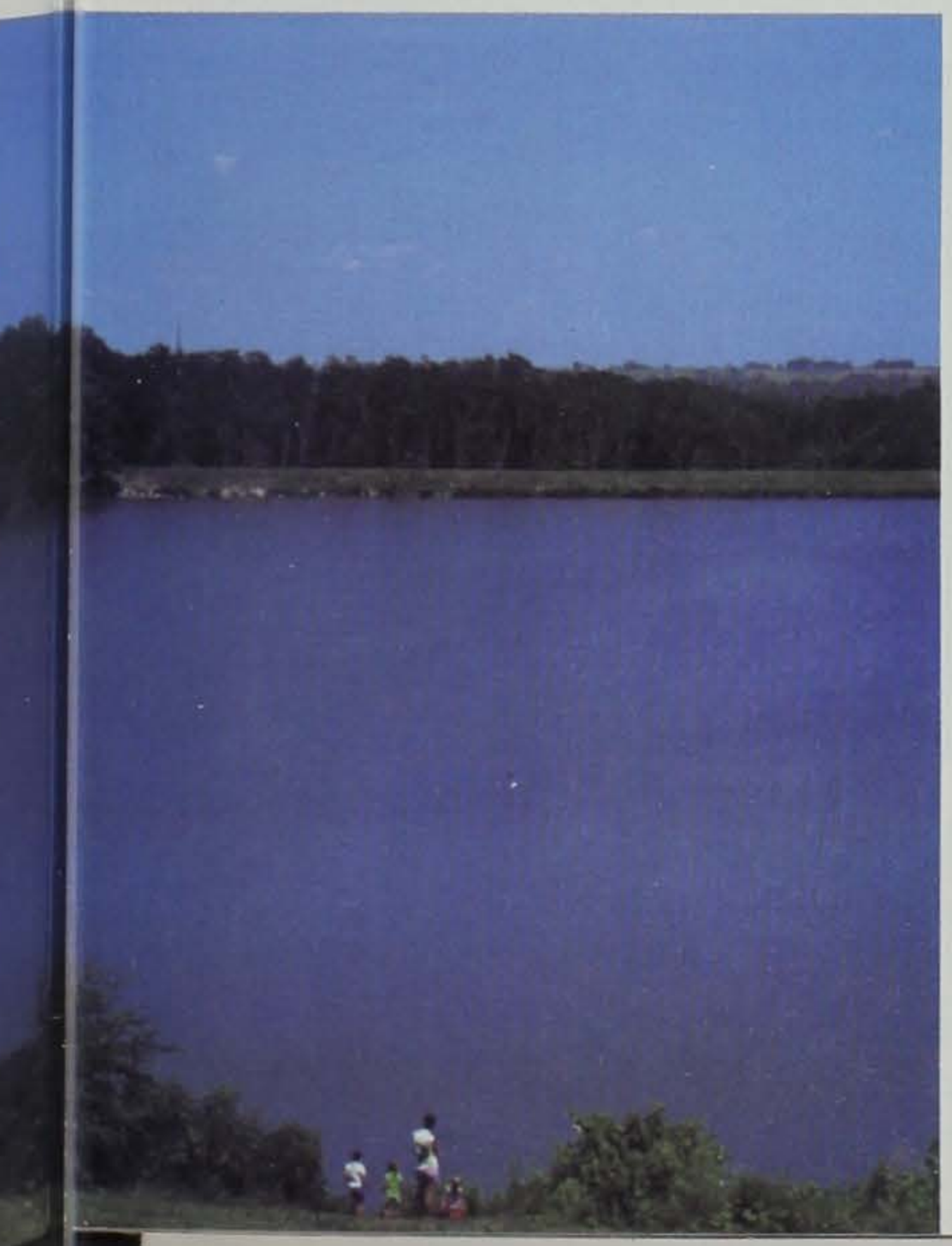
Among initial requirements mandated by the EPA is that each state complete an inventory of its lakes. This inventory includes comprehensive information concerning present water quality, watershed characteristics, biological condition, restoration level, present public use, and potential post-restoration public use.

The state of Iowa has already completed this initial inventory. Completed in 1980, it provides extensive, current information concerning 107 of the state's most important lakes.

Using this information, Iowa chose to rank each lake in three categories — potential and actual public use, level of water quality, and potential for efficient restoration. These three rankings have been combined to form a list of all 107 lakes arranged in order of priority for receiving Clean Lakes restoration funds. Lakes with the worst water quality problems, the best chances of being efficiently restored, and the greatest potential and actual public use top the list of lakes considered for Clean Lakes federal funding.

The top ten lakes on this list are then considered for further evaluation of their need for renovation. This second phase of the program is known as a diagnostic and feasibility study and involves gathering information regarding the feasibility of restoring each individual lake. Public meetings are held in order to inform local residents of the opportunities for improving their lake and to measure local response to proposed restoration projects.

A diagnostic and feasibility study of a lake produces estimates of the costs and benefits of restoration. Fifty percent of the total project cost will be paid by the federal government, if the restoration is approved by the EPA. The remaining fifty percent must be paid by state, local, or private sources.



In the final phase of the Clean Lakes Program, known as the implementation phase, restoration work is completed. Which restoration efforts are performed will depend upon the problems of each individual lake. Many lakes in Iowa are marred by excessive soil and nutrient runoff from their watersheds. The Department of Environmental Quality and the Iowa Department of Soil Conservation cooperate in restoring such lakes by reducing soil erosion through the use of wise soil management techniques in the watershed.

Many lakes are too shallow. This can be caused by the accumulation of sediments over the years or simply by poor construction design. As silt accumulates and fills a lakebed, an increasingly shallow lake leads to excessive winterkills of fish. These fish kills mean fewer catches for summer fishermen, and often necessitate restocking the lake. Shallow lakes can also cause trouble for boaters and frequently have excessive aquatic plant growth. Restorative efforts deepen such lakes, either by raising the water level or through excavation and dredging.

Another restorative technique is mechanical aeration of a lake. This can help prevent winter fish kills. Renovation of the fish population is often a part of lake restoration. This management technique requires removal of all fish from the lake and restocking the lake with large numbers of the most desirable gamefish species.

All of these restoration efforts are managed by the Conservation Commission. Governor Ray recently called for the Commission to oversee all phases of the Clean Lakes Program in order to increase the coordination of this cooperative interagency effort.

After restorative work on a lake has been completed, evaluative and maintenance work is continued to ensure that these improvements remain valuable. By monitoring gradual changes in restored lakes, the Clean Lakes Program seeks to preserve the benefits of restoration far into the future.

Several Iowa lakes have been restored in recent years. Green Valley Lake, (1st yr. of 5 yr. program), Lake Manawa (still active), Blue Lake, Lenox Lake, and Oelwein Lake have undergone restoration, although these efforts were completed before the Clean Lakes priority list was developed and were not part of the Clean Lakes Program as managed by the Conservation Commission. Swan Lake, in Carroll County (awaiting funds) is to be restored, while Union Grove Lake, Blackhawk Lake, and Lake Darling are currently under consideration by the EPA as possible restoration projects.

Immediate prospects for federal funding of lake improvement projects look dim, however. Federal budget cuts are expected to severely limit or stop the flow of federal support for the Clean Lakes Program.

The work which has already been completed by the State of Iowa has not been done in vain, however. The initial inventory of Iowa's lakes is a valuable source of information for lake managers. For example, conservation managers will be able to determine whether or not restocking a lake with fish is wise based upon a knowledge of the quality of fish habitat and the public use of a particular lake.

This inventory will also remain suitable for immediate reference if money for lake restoration becomes available in the future. With minimal updating and reevaluation, a revitalized Clean Lakes Program could be implemented promptly and applications could be made to the federal government. Such preparedness allowed the Conservation Commission to claim 83 percent of the federal Clean Lakes money made available through 1980 to the 4-state region encompassing Iowa.

Both Iowans and out-of-state visitors enjoy the recreational opportunities available at Iowa's state lakes. The Clean Lakes Program is designed to increase the benefits that visitors to some of the state's most heavily used lakes will receive in pursuit of their recreational activities. Good water quality is a commodity that should be enjoyed by all people who use Iowa's lakes. □

# NEW BROWN TROUT FISHERIES

by Gaige Wunder

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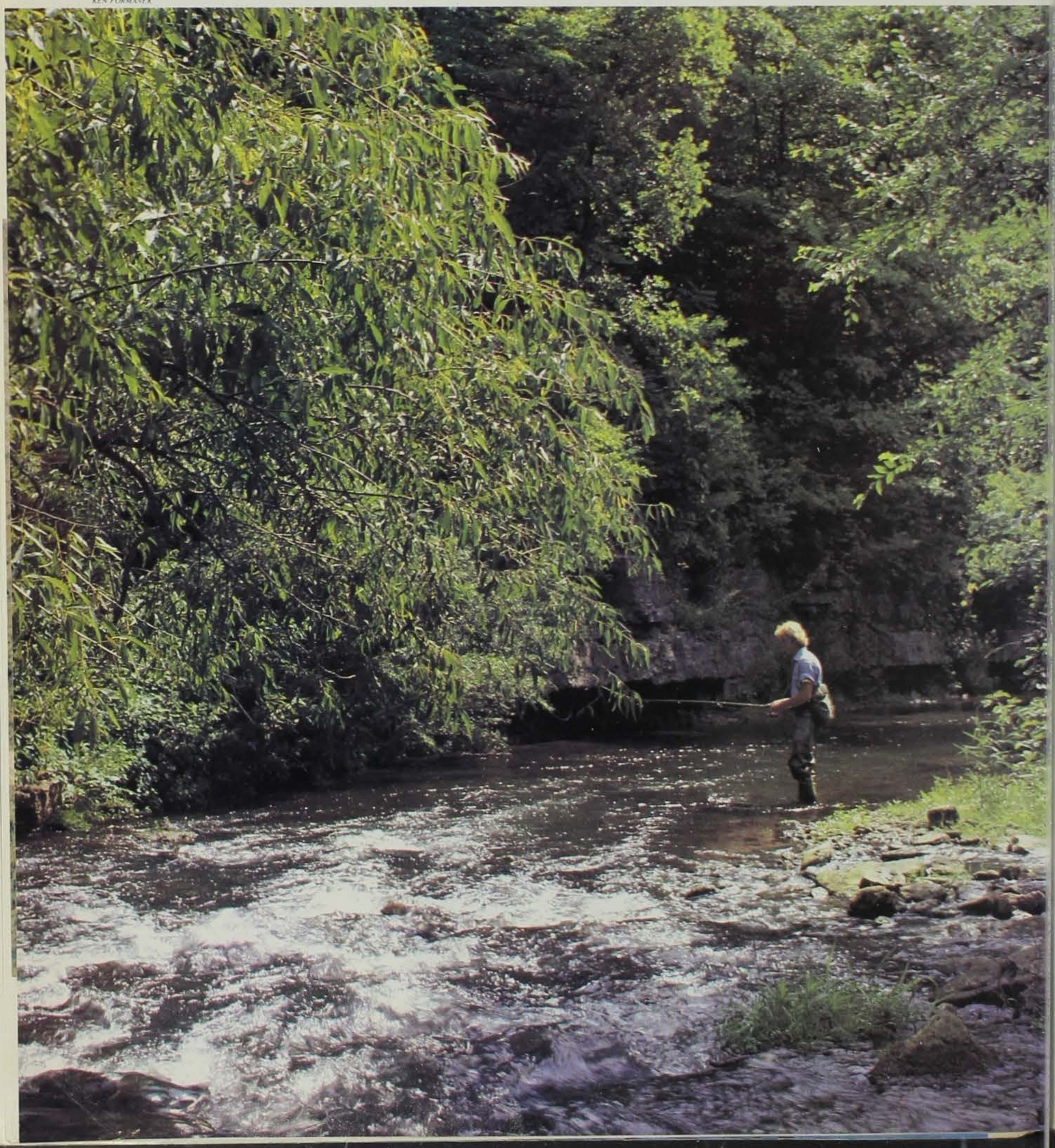


***Bank hide constructed on bend of creek (below) provides cover for browns, like the one at left.***

IOWA TROUT ANGLERS have two new stream segments where they can match wits with a "resident" Iowa brown trout. Portions of upper French Creek in Allamakee County and Spring Branch Creek in Delaware County are now being managed as part of a special Iowa brown trout project by the Fish Management Section of the Conservation Commission. The project is in response to surveys conducted on randomly selected trout anglers who stated their preference for just such a limited access, brown trout fishery. Overall goals of the project include developing stream segments where anglers can find larger than average brown trout (14 inches and up), above average stream habitat where natural reproduction of the browns may be possible, and a natural, scenic setting for a unique and diverse Iowa angling experience.

To realize these goals, the project streams had to be carefully selected, new stocking plans developed and additional regulations implemented. Selecting the stream segments was relatively easy. Only those that contained state-owned portions were considered and then reviewed for acceptable physical and biological characteristics and finally, geographic location. The upper portions of French and Spring Branch Creeks fit these criteria very well and were, therefore, chosen for the project.

Stocking trips were reduced to an "as needed" basis on French Creek and eliminated entirely on Spring Branch because of a large existing trout population. Additional regulations placed on only these special segments included a 14-inch minimum size limit on the browns and an artificial only restriction on fishing gear. These restrictions effectively limit overharvest of the browns and protect them in the stream for 12 to 18 months, hence the term "resident" trout. At that age most of these fish will be sexually mature and have a chance of spawning before being harvested by the anglers. The artificial-only regulation allows illegal trout to be returned unharmed to the stream by the angler, thereby reducing hook mortality so often encountered when returning trout caught on natural baits.

The special segments consist of that 2.2 miles of stream between Schwartz Spring and county highway D5X on Spring Branch Creek and that 0.85 miles of stream from the west spring head to a fenceline approximately 660 feet above the first county road crossing on French Creek. Both streams have signs at all access points to clearly delineate the boundaries and point out the current special regulations.

Physical characteristics of Spring Branch range from relatively poor in the heavily grazed, sand and silt bottom sections to excellent in the state-owned portions where grazing of livestock is prohibited. French Creek differs from Spring Branch in that it is a smaller stream, has a relatively silt free limestone rubble bottom and a higher gradient. The rubble bottom provides excellent cover through the project area with many browns hiding among the rocks. The higher gradient moves the water through the segment at a faster rate to keep most of the choking silt washed out. Grazing is also prohibited along this section of French Creek.

Several stream improvement techniques including trout hides and bank stabilization have been employed on both streams to better the available trout habitat and thereby increase their trout holding capabilities. The structures installed include the Wisconsin bank hide, an artificial extension of the stream bank that provides excellent overhead cover for trout. Many half-log hides have also been placed at various points on both stream bottoms just alongside the faster current of glides or gentle bends. They appear like a log lying half buried in the gravel and as with the bank hide, provide excellent places for trout to hide, rest and watch into the current for food items drifting past. Anglers should keep this in mind when fishing near either of these structures.

Two successive year classes of browns were stocked into French Creek in November, 1979 and May, 1980, to provide the initial trout population. The stocked trout averaged 6.7 inches and 3.1 inches in length, respectively. Fingerling browns have been withheld from Spring Branch due to the existing population of trout. Escapement of fingerling browns from the state-operated trout hatchery on the stream has the same effect as annual stocking to maintain an adequate population level.

Population surveys completed by management biologists last fall revealed an estimated population of slightly less than 200 browns of all sizes in the French Creek segment and about 350 browns of similar size range in the Spring Branch project area. While legal size browns (14 inches and up) accounted for only 4.7% and 2.8% in the two streams, the percentage of trout in the 12 to 14 inch range were 11.2 and 11.9, respectively. These figures represent the population in late September. Adding some growth in the remaining fall period and more this spring will put a considerably higher portion of either population into the legal size group by this summer. Current plans call for additional fingerling plants going into French Creek if natural reproduction is insufficient to adequately support the trout population. Spring Branch Creek will be monitored and stocked only if hatchery escapement of small browns becomes too low to support a fishable population. Stream enhancement devices will continue to be added to the segments as time and budget allows, and all old structures will be maintained at a functional status.

The special brown trout fisheries on French and Spring Branch Creeks represent the two newest special trout fishery projects in Iowa. Other special project segments on Bloody Run, Little Turkey, North Cedar and South Fork of Big Mill Creeks also contain populations of brown or brook trout, some with special regulations. Try them, we've set each one up to provide the Iowa trout angler with a unique and interesting fishing experience and we think it's there.

As always, additional information is available at any of Iowa's trout rearing stations at Manchester, Elkader or Decorah, or from our Iowa Trout Fishing Guide. It contains a complete map of all Iowa trout streams and handy trout fishing hints. You can pick up a copy at any northeast Iowa Commission facility, most license outlets or drop a line to the I & E Section, *Iowa Conservation Commission, Wallace State Office Building, Des Moines, Iowa 50319* and request one. □

# Shoot Hen Turkeys?

by Terry W. Little
WILDLIFE RESEARCH BIOLOGIST
*PHOTOS BY THE AUTHOR*

SPRING, GOBBLERS-ONLY wild turkey hunting is allowed in 39 states and represents one of North America's finest trophy hunts. Fall, any-sex turkey hunting is currently allowed in 31 states, but is traditional only in regions which retained wild turkey populations through their nationwide decline and near-extinction in the 18th and 19th centuries. Several states which lost their wild turkeys due to exploitation during settlement are now opening, or considering opening, controlled fall seasons because aggressive restoration programs have produced huntable turkey flocks.

Spring turkey hunting is universally defended by wildlife biologists because only bearded turkeys, which are overwhelmingly males, are allowed in the bag. Tom turkeys are excess baggage most of the year; their only role in the annual life cycle is in the physical act of mating, and then only the most dominant males obtain harems. Hens take on the entire burden of incubating eggs, brood rearing and defense of the poults. Thus bearded-turkey-only seasons, which seldom harvest more than half of the adult gobblers, have no impact on growth or maintenance of turkey populations.

Biologists are not as unanimous in their support of fall turkey hunting. Young turkeys of both sexes resemble the adult hen in October and November when fall hunting is allowed, making it difficult for even the most experienced hunter to select males from broodmates. Fall seasons thus allow both sexes in the bag, and hens commonly make up 60% of fall harvests. Proponents of fall hunting feel that shooting hens has little impact on turkey breeding populations, since competition for scarce food items and predation result in the loss of hens in the winter even where any-sex hunting is not allowed. They believe fall hunting mortality is merely *compensatory*, that is, it replaces natural mortality which would have occurred later. They point to the continued growth of turkey flocks in recent years in states where fall hunting is traditional as evidence that *controlled* fall hunts have little overall impact.

Other biologists are not as confident. Indiscriminate killing of all ages and sexes was a factor that led to the near-extinction of the wild turkey during the early years of settlement of this nation. While subsistence hunting bears little resemblance to modern, limited, fall hunting, conservative biologists do not wish to repeat costly mistakes that could reverse years of difficult and expensive restoration work. States with long traditions of fall hunting often have lower turkey densities and lower spring hunter success rates than states which permit only gobbler hunting. Some states which have eliminated or recently introduced fall seasons have seen changes in their turkey flocks which may be related to harvesting hens.

The chances of resolving this issue to everyone's satisfaction are slim. The elusive nature of the wild turkey makes it extremely difficult for conservation agencies to obtain data on population size, age and sex composition, annual and seasonal mortality rates, and nesting success — information which is needed to fully assess the impact of various harvest strategies on wild turkey populations. States with fall harvests rely primarily on the fact that their turkey flocks are stable or growing as evidence that shooting a limited number of hens is biologically justifiable.

Spring turkey hunting has been a reality in Iowa for the past 8 years. As a result of 20 years of intensive restoration efforts, turkey flocks are thriving in southern Iowa and are growing rapidly in other forested portions of the state. Turkey densities of 40-60 per square mile of forest and spring hunter success rates of 20-25% greatly exceed those reported from most states in turkey range, indicating Iowa has one of the healthiest and most rapidly growing turkey flocks in the nation.

*Figure 1. Wild turkey gobbler carrying a minature radio transmitter.*

Because of this, the ICC has recommended that Iowa's first fall, any-sex turkey hunt be held in 1981. Unlike many states, however, Iowa has a sound basis for believing any-sex hunting seasons are biologically justifiable. For the past 3 years, the ICC has been conducting a research project at Stephens Forest, near Lucas, which sheds some light on turkey population dynamics. One hundred fifty-two turkeys have been fitted with miniature radio transmitters and followed until their death or the radio failed, often 2 or more years after capture. Radio-carrying turkeys allow researchers to identify seasons that are critical for turkey survival, and the proportions of the population that die annually. Finding nests and following broods with transmitter hens allow estimation of annual production and poult survival rates.

*Figure 2. Turkey hens with wing and neck markers. Hen No. 11 carries a barely visible radio transmitter.*

The study is not complete, but 3 years of data do provide insights into the reasons for growth and stabilization of a turkey flock. Summarized briefly, mortality data show that half of the poults produced each year die by their 4th week after hatching, with little mortality occurring the remainder of the brood period. Of those turkeys living to 1 October, 50% of the young hens and 39% of the adult hens are lost annually. Annual mortality rates for males are about 35% for young of the year and 71% for adult gobblers. Most young hens (70% of the total annual mortality of this group) are lost in the months of October-December, while the reproductive period of April-June is hardest on adult hens. Predators, primarily coyotes, are the chief agents of hen mortality, but a variety of avian and mammalian predators occasionally will take a hen. Mistaken and illegal shooting of hens during spring gobbling seasons also takes a share, perhaps 5-8%. Virtually all males that die are shot during spring, gobblers-only hunting seasons. The winter months, when food is scarcest and turkeys should be most vulnerable to starvation, disease and predators, are relatively easy months for the birds to survive. Apparently winter stresses are relatively minimal on southern Iowa's turkey flocks.

Few young hens are able to nest successfully their first spring. Juvenile hens are more susceptible to predators than adult hens in early spring, with most mortality associated with the breeding season actually occurring prior to nesting. As winter flocks disperse and harems are formed, lone turkeys are more vulnerable to predators than those in large flocks. Hens are seldom killed by predators once they begin setting on a nest. While virtually every hen will begin laying a clutch of eggs, regardless of age, most juvenile hens lose their nests to predators or human disturbance during the egg laying period and few attempt second clutches. Adult hens are more persistent and nearly twice as many eventually reach the incubation stage. Nesting success rates for adults are nearly triple those of juveniles. As a result, adult hens add 3.5 poults on the average to the population, while juvenile hens add barely 1 poult.

These results are preliminary, but they seem to indicate that a fall turkey season aimed at harvesting young-of-the-year turkeys could be biologically feasible if it is timed to precede peak periods of turkey mortality. Young hens survive and nest poorly, and produce few poults during their first breeding season to add to fall turkey populations. Most young males are sexually immature their first spring and perform no reproductive function until at least their second year. Thus removing a portion of young birds and some adults in the fall should have little effect on population growth. Preliminary work with computer modeling of these mortality and hatching data suggests at least 20% of the population could be removed in fall hunting seasons without reducing long-term populations, if hunting mortality is compensatory.

*Figure 3. Using a hand-held antenna to determine the location of a radio-carrying turkey hen.*

With this in mind, the ICC has proposed a fall, any-sex turkey hunt for 1981. Only portions of southern Iowa which have well-established turkey flocks will be opened to fall hunting. Shotgun or muzzleloader hunting permits will be available in 2 zones (1,000 permits per zone) for a season running from 21 October to 1 November. Licenses will be drawn randomly from among the applicants for each zone. Unlimited archery permits will be available and archers will be allowed to hunt in both zones without restriction during a 33-day season running from 2 November through 4 December. Both shotgun and archery hunters will have to apply on a special application form supplied by the ICC. Shotgun hunters must apply between 13 July and 11 August; archers may apply any time prior to 4 December. Only 1 turkey may be taken per individual in the fall, either with a shotgun or bow.

With normal, fall turkey hunting shotgun success rates of less than 40% and archery success rates of less than 3%, a harvest of 1,000 or fewer turkeys is expected during the first fall season. This represents only 10% of southern Iowa's estimated fall turkey population, or just half of the allowable harvest indicated by the research data. This limited harvest clearly represents no apparent threat to the long term maintenance of southern Iowa's turkey flock.

Several questions remain to be answered, however, if the impacts of fall hunting are to be clarified. Is fall hunting strictly compensatory? If shooting hens adds to existing mortality, a decline in turkey populations could result. A reduction in winter turkey numbers is not in itself harmful if stable populations can be maintained at lower levels, but long-term declines which lead to low populations must be avoided. Is reproductive success elastic enough to permit increased productivity if fewer hens enter the breeding season? If so, it could offset hen losses to hunting even if they are additive. What are the effects of shooting young males and adult gobblers in the fall on spring hunting? Spring gobbler hunting is currently a popular trophy hunt and one of the highest quality hunting experiences available in Iowa. Removing a portion of the males in the fall may reduce the spring hunter's success if a large number of males is harvested. Careful consideration will have to be given the merits of fall versus spring hunting if this popular program is to be adversely affected.

The only way these questions can be answered is to proceed with carefully controlled fall hunting seasons and monitor their impact on populations in general and spring hunting in particular. While the ICC could bury its collective head and blindly protect the spring hunter, many potential hours of recreation could be lost without proceeding cautiously with carefully controlled fall hunting. Only a few years of experience will tell if the experiment is sound, but without a movement toward fall turkey hunting, a major hunting resource could remain untapped. □

*Figure 4. Proposed fall turkey hunting zones for 1981. 1,000 shotgun permits will be used for Zone 1 (orange) and 1,000 for Zone 2 (yellow).*

# Walleye Habits in the Iowa Great Lakes

by John Pitlo and Dick McWilliams

*PHOTOS BY THE AUTHORS*

WALLEYES ARE ELUSIVE and at times very hard to catch. Serious anglers spend years trying to figure out just where to fish, what day, or time of day, as well as which type of gear to use. Although selection of fishing gear will undoubtedly be hotly debated, information on where walleye may be located is at hand.

Two biotelemetry (radio tracking) studies were conducted on West Okoboji Lake and Spirit Lake walleyes to determine their daily and seasonal movement and behavioral patterns, their habitat preferences, and the influence of weather and human activity on their habits. Obviously, information about movements and behavior are of interest to all walleye anglers. However, just as important, information from the studies will be incorporated with findings from other studies to more fully understand the walleye life cycle, and used to further define and refine management needs and programs.

Until recent years, studies of this type were limited due to the large size of radio equipment needed. Advances in the miniaturization of radio components have opened the door on this important but relatively unexplored area of fish life. Transmitters used in these studies were about two inches long and ½ inch in diameter (Figure 1). Each transmitter had a different frequency and pulse rate so individual walleye could be located and tracked. Transmitters were surgically placed in the stomach cavities of both male and female walleye (minimum length of about 19 inches), the incision sewn shut and the fish released. An outboard motor boat was used in tracking the walleyes, with tracking conducted from April through November.

Overall behavioral patterns of the radio-tagged walleye became apparent as the seasons progressed, with distinct changes in the patterns between seasons. Despite differences in the physical characteristics of West Okoboji Lake and Spirit Lake the movement and behavior patterns were similar.

Tagged walleye had wide-ranging movements during the spring (April-May) and autumn (September-November) months, with individuals traveling over much of the lakes. At night, walleye cruised along parallel to the shoreline. Movement was in a relatively straight line, or followed a particular depth contour, with walleye moving from a point A to a point B. This type of movement was characteristic for all walleye, although on occasion they were tracked across open water or were located near the middle of the lake. During feeding forays (quickly recognizable by a zig-zag swimming pattern) walleye were located in a variety of areas; in shallow water along the shore or in inlets, along both shallow and deep water rock reefs or rock piles and along drop-offs in various areas of the lakes. There were no consistent patterns established by the tagged walleye. On one night a fish would move into shallow water, and on the following night be located along a deep water rock reef. This type of inconsistent activity may partially explain why fishing is good on one night and poor the next.

During the day in the spring and autumn the tagged walleye were basically inactive, and usually remained in one area. They were most often located on or adjacent to rock reefs, rock piles, areas of clean sand or along drop-offs. In Spirit Lake, walleye were usually in water 8-12 feet deep and in West Okoboji Lake in water 10-20 feet deep.

As spring turned to summer tagged walleye in both lakes moved into areas of submergent vegetation, and by late June started to occupy distinct, smaller areas of the lake. These areas, called activity centers, were then maintained throughout the summer months. There was a strange attraction for these areas, and a walleye captured and released in another area of the lake would return to his/her individual activity center. In addition, we found walleye used the same areas year after year. The size of the activity centers ranged from about 15-236 acres. They were generally oval or oblong in shape, and included beds of submergent vegetation as well as rock reefs, rock piles, drop-offs or inlet areas. There were no relationships between the size of the activity centers and the size or sex of the tagged walleye.

Within each individual activity center, walleye had definite resting and feeding areas. Resting areas were usually in larger beds of submergent vegetation or in deeper water in West Okoboji Lake. Once an individual chose a resting area it could be routinely located in that area for weeks at a time. Preferred resting areas in Spirit Lake were in large beds of pondweed (*Potomogetan spp*) and in West Okoboji Lake in areas of coontail (*Ceratophyllum*). These areas were relatively close to feeding areas and provided the walleye with cover and also would reduce light intensities during the bright summer days.

Rock reefs, rock piles, drop-offs, inlet areas or edges of vegetation in all depths of water were the most frequently chosen locations for feeding forays. Walleye moved into shallow water, and at times could be located in water less than two feet deep. Movement between resting and feeding areas was usually along a particular depth or along the edges of submergent vegetation. For instance in Spirit Lake, Big Stoney Point was a favorite feeding location for three walleye, with resting areas located east of the point along the southern part of Angler's Bay. The walleye would move along the outside edge of submergent vegetation onto Big Stoney Point, then after feeding, etc. would move back along the edges to their respective resting areas.

As most walleye anglers know, walleye are primarily active at night, but periods of peak activity changed from season to season. During the spring, the greatest amount of movement in Spirit Lake was during the morning — from 8-10 AM — with smaller periods of activity during the evening and earlier morning hours. Peak movement of all walleye during the summer and autumn months was between 8 PM and 2 AM with much shorter, smaller periods of activity around sunrise. Periods of activity generally were daily, however, continuous tracking of individual fish also showed they remained in one area for periods up to three days, then resumed the more characteristic evening-morning activity pattern.

***Tiny transmitters were implanted in walleyes so the fish could be tracked from boats.***

The influence of weather on walleye movement and behavior was minimal. However, this does not necessarily mean they would or would not bite during any particular weather pattern. As daily tracking of the tagged fish was conducted, cloud cover, wind direction and velocity, and barometric pressure were recorded. There were no detectable effects between the activity of the tagged walleye and changes or patterns in weather, except for one case. There was a strong, steady south wind for about five days one opening. As the wind died, all tagged walleye were found in Spirit Lake along the northern shoreline, and within 24 hours the tagged walleye had moved to other areas of the lake. Although hardly conclusive, it does indicate wind can, at least for short periods of time, influence walleye behavior.

Influences of human activity on the tagged walleye were minimal. Anglers wading along the shoreline had no effect on walleye behavior. In fact on several occasions, tagged walleye were found swimming between the waders and the shoreline on feeding forays, obviously unconcerned by the nearby anglers. The effects of boating on tagged walleye varied. During the day, walleye would move to one side or the other if a boat passed directly overhead. This sideward movement, particularly noticeable during the spring and fall, occurred when the fish were in shallow water and occurred whether the boat was drifted or driven over the fish. In Spirit Lake walleye tended to move if they were in water less than 8 feet deep and in West Okoboji Lake in slightly deeper water. Since the sideward movement occurred whether the motor was running or not showed the fish were reacting to the shadow of the boat rather than to any motor noise. At night it was impossible to tell whether the walleye reacted to boating activity or not.

As veteran anglers know, walleye fishing is best during the spring and fall, which coincides with the wide-ranging movements and extensive use of rock reefs, piles and drop-offs. Angling success is poorest during the summer, when walleye have more confined movement patterns, although the changes also coincide with such factors as food abundance and availability. In visiting with more successful anglers, their best successes during the summer have been while fishing along the edges of vegetation, which coincides with the use of these areas by the walleye.

Information from these studies will not, unfortunately, make walleye bite more readily. However, it does show the best angling success is associated with an understanding of walleye behavior, and this information might provide all anglers a better opportunity to tangle with the elusive walleye. □

# MAQUOKETA CAVES

## *A Park With A Long History*

by John Lambertz
PARK RANGER

IN DECEMBER 1920 the people of Maquoketa learned that their dream was about to come true. The Hon. J. Kelso, a member of the State Park Commission, advised them that the Morehead caves were to be purchased for a state park. This area would later become Maquoketa Caves State Park.

The park area had seen much use before the state acquired that first parcel of ground in April 1921. As far back as 10,000 years ago, prehistoric Indians used this area for shelter while the western portion of the state was covered with ice. Up until 3000 years ago, small bands of nomadic hunters most likely used the caves for shelters. From about 3000 to 900 years ago, the woodland cultures lived in the caves during the fall and winter seasons. The woodland people fished and gathered wild rice along the rivers during the spring and summer, and gathered nuts and berry's and hunted in the caves area during the fall and winter.

The historic Indians such as the Fox and Sac tribes used Dancehall Cave for council meetings. The first white men to see the caves were Joshua Bear and David Scott, early settlers who found the caves while on a hunting trip in 1834. From then until the 1860's, the site was visited by various explorers.

During the 1860's the area, then known as Burt's Cave, became a popular place for the local residents to go. In 1868, a 50 X 100 foot dance floor was constructed north of the Natural Bridge. From then until about 1900 the "Caves" was a popular place for picnics, dances, parties, and exploration. The area was so popular that the local grocers were advertising food for "cave parties".

From 1900 to 1910 the area began to loose its popularity but regained it again from 1910 to 1916 with the advent of the automobile. In 1916 the area, now known as Morehead Caves, had an elaborate brochure printed about it. The brochure contained descriptions of various caves, rock formations, springs, and a detailed automobile guide to get to the caves from Maquoketa. By this time, Dancehall cave had become clogged with debris, mud and rocks from the upper entrance to the middle entrance.

In 1919 the people of the Maquoketa area undertook the project to make Morehead Caves a state park. In 1921 the Federated Women's Club secured an option on the land that now contains the Dancehall Caves, Natural Bridge, and the Ranger's residence. In April 1921 the State of Iowa purchased this area. During the next decade local enthusiasts pressed for expansion and development of the park. In 1931 local citizens and groups launched a fund drive for park improvement and in July 1931, the second portion of the park was purchased bringing the size of the park to 85 acres.

On October 13, 1933 the park was formally dedicated and presented to the people of Iowa. Mrs. H. Frankel, Chairperson of the Iowa State Board of Conservation, and Clyde Herring, Governor of Iowa, were present for the acceptance. This began the period of greatest activity on the park. A Civilian Conservation Corps (CCC) camp was established in Maquoketa in 1933 in order to improve state parks and implement soil conservation procedures in the county. At Maquoketa Caves, they cleared the mud and debris from Dancehall Cave, constructed a new channel for Raccoon Creek which flows thru the cave, constructed thousands of feet of trails, and erected three hexagonal shelters. The CCC concluded its work on the park in 1936.

In 1938 the Work Progress Administration (WPA) began to work on the unfinished CCC projects and initiated its own projects. These new projects included a shelter/concession lodge, a stone park entrance, restrooms, retaining walls, picnic and parking facilities, and additional trails. The WPA program was completed in 1941.

In 1940 a third purchase of land was made for the park, bringing the size of the park to 111 acres and included the caves in the northern part of Raccoon Valley. In 1961 and 1976 two more purchases of land were made which brought the park to its present size of 265 acres. During the period from 1941 to 1979 several improvements were made to the park. A picnic shelter was constructed; the camp area was moved to the western portion of the park; new restrooms were constructed; the steps, railing and walks were improved into and thru Dancehall Cave; and a new lighting system was installed in Dancehall Cave.

In 1979 a master planning project was begun with botanical, geological, archeological and architectural surveys of the park. The staff task force, comprised of members from various sections of the Conservation Commission, began work on the plan in July 1980. Using members from the various sections and their expertise, the task force will create a plan that will be responsive to the recreational demands without harming the sensitive environment of the park. As the plan is developed, a series of public meetings will be held to receive input on the plan.

The master plan will include a nature/interpretive center, a nature trail that will be handicap accessible, an improved trail system, expanded picnic and restroom facilities, a modern camping area, and increased areas for wildlife and nature study. The modern camp area will include shower/restroom facilities, electrical hook-ups and walk-in camping sites. Improvements to the trail system will make hiking easier, protect sensitive areas, and make some areas of the park accessible to the handicapped. Picnic areas will be expanded, and a shelter, playground and modern restrooms will be constructed. An area of the park will be managed for wildlife with tree plantings, food plots, and the reestablishment of a five to seven acre prairie. The Nature/Interpretive center will include displays, a small classroom and quarters for summer interpretive staff.

Maquoketa Caves State Park has had a long history and has a great future for the people of Iowa as its new Master Plan is completed and developed. As funding becomes available and the plan is implemented, the park will be better able to serve the people of Iowa and protect the features of the park that have attracted people to this area over the years.

# WARDEN'S DIARY

by Jerry Hoilien

Summer's coming on strong now and so are the mosquitos. Never seems to be a shortage of them. Makes you wonder sometimes why the good Lord made those things. Surely not just to pester folks. Summer should be easy for everyone, with vacations for the kids, family picnics, boating, water skiing, swimming and time to relax.

Wish we officers could relax, but now we're busy as heck. With all the nice weather, everyone's outside. Most people are real good but some shouldn't even be let outside — they forget their manners and act as if they left their brains at home. If they would just slow down, take some time to think, they could plan and enjoy. The out-of-doors is to be respected, not only to preserve it but you too. My old chemistry teacher used to tell us — *"too much of anything will kill you"*. This includes sun, water and even air. Moderation and good common sense does it. It's no fun looking for accident victims and you get a rock in your stomach when you're sure it's a body your going to find. The older ones are bad enough — but I never get used to the kids.

You know if we could just get the message to the kids to wade upstream. (They're going to wade anyway, Mom.) Then if they step in a hole, the current might push them back out. If they're wading downstream, it hits them in the back and pushes them on into deeper water. If we only save one — it's worth it — believe me.

I remember listening to an old warden talk to a classroom of youngsters when a question came up about skunks. *"Why do we have skunks?"* a little one asked. *"They eat quail eggs, I know, I saw one do it once — my daddy shot it. They smell terrible too"*. The old warden smiled and admitted that a skunk had a very *strong* weapon there, but only uses it in defense after trying to bluff its enemy off. He went on to say they were right about those quail eggs. The skunk is a predator on quail eggs just like some snakes and other wild creatures including stray dogs and cats. Then he asked, *"Do you know what makes a mother quail start nesting in the spring? The men who study them say it's the increasing length of daylight. Now we all know that as you go north and south this changes — but it stands to reason that all the mother quail in Southern Iowa from the Mississippi to the Missouri Rivers start to lay eggs about the same time. Which means that they'll all start to set about the same time and naturally all the little quail are going to hatch out on about the same birthday. Right?"*

*"What if it rains? Baby quail can't take storms too well. If we got a hard rain, we'd loose almost all our quail for the year. How about that?"*

*"But, when a skunk or snake breaks up that first nest, mother quail is pretty persistant and she'll renest, and if she looses the next one, she'll keep trying until she gets the job done. Now, instead of all our quail being hatched the same day, the nesting season is spread over several weeks or months. When that heavy rain comes we'll loose only a portion of the young chicks."*

*"What do you think of that skunk now?"* he asked. *"He's pretty important, isn't he?"* she said. *"Wish my daddy hadn't shot him"*.

My chest ached with pride at the old warden's maybe over simplified story. I enjoyed the look on the little girl's face as she struggled with the wonders of nature's creation and its magnificent, orderly plan. Guess mother nature's a lot smarter than we humans give her credit.

The little boy next to her raised his hand and asked *"What about mosquitos?"* That wise old warden turned toward me and said, *"I believe I'll let the new warden answer that one"*.

*The Changing Role of the*

# STATE PARK RANGER

by Jerry Reisinger
PARK RANGER, VOLGA RIVER STATE RECREATION AREA

PHOTO BY THE AUTHOR

MANAGING A STATE PARK calls for much more than merely leaving the area alone to preserve the natural environment. With the great public use of natural areas, considerable knowledge of administrative procedures and technology is required of the modern park ranger. There are a total of 65 state parks in Iowa which are enjoyed by some 14 million visitors annually. With large numbers of people using these areas on pleasant weekends, the parks resemble small cities. The park ranger's duties and equipment have changed considerably over the years to accommodate this increasing demand.

The modern state park ranger does not ride a horse but spends many hours patrolling a large area in a very sophisticated vehicle containing the latest in state police radio equipment, sirens, and lights, as well as other contemporary gadgetry. His or her normal day is no longer spent entirely on the ever-present maintenance duties. Rangers now must assume the role of top law enforcement officials and competent field administrators. It is not uncommon for a ranger to be involved in an illegal drug case or a high speed chase at one point of the day and then head up a public hearing concerning a master plan development of the area in the afternoon. The ranger may then present a slide show in an outdoor setting before patrolling the campground at night.

Today's ranger is sometimes responsible for a number of full-time and part-time employees and must make sure that the public's day-to-day, as well as long-range demands, are met adequately. The ranger must be periodically schooled in first aid and is the first to be called during any emergency in the park, whether it be a drowning, a motor vehicle accident, or an animal bite.

Some parks have water treatment facilities comparable to those of small cities. Rangers are required to be certified as water and waste water treatment plant operators and must make sure that federal, state, and local pollution control laws and guidelines are met. The same ranger who once made sure the garbage cans were dumped each Monday and Friday, now makes certain that an appropriate amount of money is budgeted to pay the contracted hauler who properly disposes of the trash.

The ranger must be trained to serve the public with sincere respect and to assist people in every way possible. Somehow rangers must find time to stay in personal touch with the public and enjoy answering common questions such as, "How many deer are in the park?" or "Where can a person catch some panfish for supper?" Rangers are often expected to know the most recent version of laws designed to protect fish and wildlife and be able to implement good forest management techniques. They should know the quality of fishing in the lake or stream found on the area, while also being aware of current boating regulations.

The park ranger must be a well rounded individual, patient and adaptable to change. Today's park ranger can no longer rely on old ways, old politics, and old management skills to better conserve the park environment for the ultimate in public enjoyment. □

# A PARK RANGER'S DAY

by Warren Strait

*7 AM each morning*
*time to roll out of bed.*
*Five hours of sleep*
*is all you need, it is said.*

*Polish your badge,*
*shine your shoes,*
*go 10-41 and*
*turn on the news.*

*At 8 AM*
*the workers all arrive*
*all full of enthusiasm,*
*gusto and drive.*

*With trash to pick up*
*and washrooms to clean*
*mowing to be done*
*no end can be seen.*

*Parks have fishing and boating,*
*snowmobiling and hiking*
*also swimming and floating,*
*sailing and biking.*

*We have camping for those*
*large families and just one.*
*They have hours of enjoyment*
*and just good family fun.*

*One camper has trouble*
*with his neighbor's dog.*
*Another camper has lost*
*his fire place log.*

*On the beach we have trouble*
*with an obnoxious drunk*
*but our little lifeguard*
*showed plenty of spunk.*

*On weekends our shelter*
*become things to be sought.*
*A perfect example of*
*those who have and have not.*

*At 10:30 it is time*
*to vacate the State Park,*
*with much resistance*
*they terminate their lark.*

*At 1:30 AM*
*I am awakened by a clamor*
*one camper has threatened*
*to kill another with a hammer.*

*At 2 AM two young ladies*
*are found swimming at the beach*
*at 5 AM their nude boyfriends*
*are listening to a speech.*

*20 years as a Park Ranger*
*really isn't that bad*
*to work with the public*
*for this opportunity I'm quite glad.*

# The Armed Conservation Officer

by Don Simonson

IOWA CONSERVATION OFFICER

PHOTO BY THE AUTHOR

SOME PEOPLE like to poke fun at the Conservation Officer by saying *"What are you wearing a gun for, think a rabbit will attack you?"* It makes a good laugh if taken in fun — BUT — consider trading places with the only law enforcement officer who has the obligation of checking the licenses of hunters who are armed with every kind of weapon imaginable. This includes shotguns, handguns, knives, bows and arrows, hand axes, and rifles of every caliber available.

Iowa Conservation Officers are "Peace Officers" by statute, with the powers of arrest of any violation committed in their presence. We are also commissioned by the Department of Interior's U.S. Fish and Wildlife Service as U.S. Deputy Game Wardens for certain Federal violations. Because of our full arrest powers we are often called upon by the State Patrol, Sheriff's Departments and other agencies to assist in every type of law enforcement situation imaginable. It might be stopping a car for failure to pay for gasoline; apprehending stolen automobiles; or looking for prison escapees.

CO's were first given peace officer authority in 1935 when the legislature felt the nature of their duties required full arrest powers. Now in the 1980's we need these powers even more as the people we are arresting for game violations are often past offenders of more dangerous crimes. Almost every person we arrest is armed, and many have been drinking heavily.

State law requires CO's to attend the Iowa Law Enforcement Academy, which is now a 10-week course located at Camp Dodge just north of Des Moines. A considerable amount of time is spent on firearms training at the academy. Some of our CO's have distinguished themselves on the ILEA range and have brought home the firearms trophy to show for it. CO's are also required to qualify quarterly with their duty weapon to stay proficient.

Smith and Wesson model 28 .357 magnums were first issued to CO's in 1965, and remain the duty weapon of today. By policy, CO's must wear their issue weapon if it is visible, but on undercover assignments, or where the weapon is concealed, they may wear a weapon of their choice. Some CO's also have a "car gun" which is normally a high-powered rifle or a shotgun which is used to dispatch wounded or sick animals that present a threat to persons or vehicular traffic. This weapon is also used in some law enforcement situations.

Assault on CO's has been of paramount interest in the past few years, with more and more on record each year. Figures show the CO has one of the most dangerous law enforcement jobs in America. According to a nationwide survey conducted by the Wyoming Game & Fish Department, the CO is 5 times more likely to be assaulted with a firearm — and 8 times more likely to die from the attack — than is any other type of law enforcement officer. Just recently, North Carolina, Idaho, and Louisiana had CO's killed in the line of duty. By carrying weapons we can decrease this type of activity. The author, in two separate situations this past hunting season, avoided personal harm when the persons involved became aware the officer was armed.

The Iowa Conservation Officer is a highly trained professional law enforcement officer whose primary responsibility is working for the people of Iowa by detecting and prosecuting game and fish violations. He does not wear a sidearm to intimidate the citizens he works for, but to hopefully protect himself and others if the situation should arise.

## Lookin' Back

*Ten Years Ago*

the *Iowa Conservationist* featured a story on Stone Park just north of Sioux City. It is believed that old trails in the park were formed by herds of wild buffalo.

Hunters were encouraged to keep a notebook each year on success to enable them to return to good spots. It might also point out loss of habitat over a period of years.

*Twenty Years Ago*


the magazine explored three ways to catch trout — fly, bait and spinner. Even though all three have their enthusiasts it was concluded that spinner fishing is probably more effective overall but if you had to catch a trout, bait might be the best bet.

Another tip two decades ago was to lower a punctured can of condensed milk into the water to attract bluegills, crappies and perch.

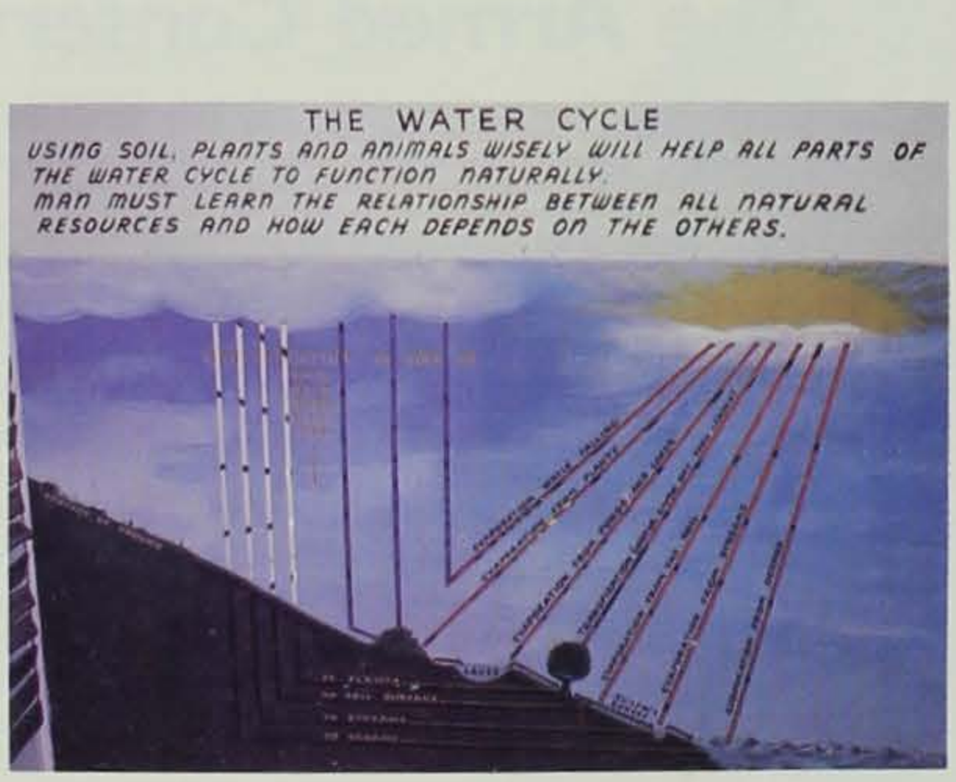
*Thirty Years Ago*


the *Conservationist* ran a story about bird banding. A variety of information can be gathered using bands on birds but length of life and distance traveled are two of the more interesting. One robin banded in Iowa was found dead ten and a half years later. At the time this was a species record and may still be.

Prairie chickens had nearly disappeared from Northwest Missouri and were all but gone from Iowa.

# CLASSROOM CORNER

by Robert Rye




How much water do you need to survive day after day? Does a gallon seem too small and 100 gallons seem too large? You need only one and one-half quarts per day to survive. Leave the water on when you brush your teeth and you can waste three gallons of water. Have you ever stood in the shower for an extra 30 seconds and just let the water run? Ever leave the drip at the kitchen sink or that constantly running toilet unrepaired until the next month? That is enough water for eight days at your "get-by" level.

You read about the severity of water problems but how many of us can accurately visualize what a shortage would be like? Water prices aren't listed in front of buildings as you drive through a city. The price isn't going up monthly or weekly. Water is even more valuable than oil. Gasoline prices we hear about daily — we see the prices go up at our favorite station as we drive through any town, the balance of payments to oil nations are in every newspaper. You can walk from one place to another and save gasoline but you can't replace that one and one-half quarts of water you need.

Water's importance is shown by the fact that some states have water agreements and water rights which date back more than 100 years. We here in Iowa don't hear about battles over water rights now — but the future may be different. Now we hear about the problems of too much water at one time and not enough at another, and the pollution by soil and chemicals of our streams, rivers, and ponds. How many of us really become excited or concerned by these?

Water is an essential component of agricultural and industrial production, energy conversion, wildlife management and residential life. Growth in our nation's population and standard of living is placing an increasing demand on this limited and often valuable resource. The problem, effective management of our water resources, is hampered by lack of understanding of the major variables by users and limitations of the resource system.

Many times a year we hear about the subsoil moisture, but have you ever heard of aquifers? These are the gravel or sand layers through which the water moves to become purified. Water is pumped from these layers by man. If it is taken from one aquifer area, that affects the amount available to another area.

Water travels in what is called a hydrologic cycle or water cycle. This means water starts in one place in the cycle and will eventually return to that point again. Let's start the cycle as water falling in the form of rain. Once it reaches the earth's surface, some is absorbed, some runs across the ground surface to rivers and lakes, and some evaporation occurs from air, leaves, soil, rivers and lakes. With this evaporation, the water moves into the air and forms clouds — clouds then give us rain — the hydrologic cycle — see photo.

What can you do about water? The water cycle is too large, you can't control floods and you don't operate a utility company. But, you can still do your part!

If your group wants to know more about the hydrologic cycle, or your effects on water use, or how the water cycle affects wildlife or any of our natural resources, call the Conservation Education Center (515) 747-8383 for a group reservation.

## *Three Commissioners Appointed by Governor*

*Baxter Freese*, 55, of Wellman and *F. Richard Thornton*, 42, of Des Moines were recently appointed as new members of the Iowa Conservation Commission by Governor *Robert D. Ray*. Governor Ray also reappointed *Marian Pike*, 68, of Whiting to another six-year term. The appointees began their six-year terms May 1. Their terms expire April 30, 1987.

Freese is a farmer and has served as past president of the Iowa Cattlemen's Association.

Thornton is an attorney. He is an active member of Ducks Unlimited where he served as state chairman from 1974-77. Thornton also is a sailing enthusiast.

Marian Pike was first appointed as a Commissioner in 1975. She and her husband farm in the Whiting area. She is a homemaker and free-lance writer.

All three of the appointees have interests in many facets of conservation.

Commissioners whose terms expired April 30, 1981 were Thomas A. Bates of Bellevue who had served since August 4, 1972 and John C. Brophy of Lansing, who had served since July 1, 1975.

## *Warden's Diary*

Last month, Warden's Diary was taken over by a new writer following the retirement of *Rex Emerson*. We would like to introduce *Gerald Hoilien*, the new "Warden." Jerry is assigned to Allamakee county with area officer responsibilities. He has been employed as a fish and wildlife law enforcement conservation officer with the Iowa Conservation Commission since 1960.

## *Correction*

Last month an article entitled "Palisades-Kepler State Park" was identified as having been written by *Wayne Buzzard*. The actual author was *Mike Schoneboom*, park ranger. The editors regret the error.

WILDFLOWERS OF THE MONTH

# *Two Arums*

by Dean M. Roosa and Sylvan T. Runkel

PHOTO BY RANDALL MAAS

## Green Dragon

*(Arisaema dracontium)*

Green Dragon *(Arisaema dracontium)* is an uncommon member of the Arum family and is found in all but the northwest part of Iowa. It seems most abundant in southeastern Iowa, especially in sandy woodlands.

This species may achieve a height of three feet, but is normally closer to a foot. It gets its common name because the deeply divided leaves suggest a set of dragon claws, or because the spadix somewhat resembles a breath of fire exhaled by a dragon head, represented by the spathe. The foliage is composed of a single leaf divided into 5-15 leaflets arranged in a semi-circle.

Flowering parts branch off from the main stem near the ground. The flowers develop into shiny green fruits which turn an orange-red in the fall.

PHOTO BY KEN FORMANEK

## Jack in the Pulpit

*(Arisaema triphyllum)*

Many times more common than the preceding species, Jack-in-the-Pulpit *(Arisaema triphyllum)* occurs throughout Iowa in moist woodlands. A member of the arum family, the plant has a spathe and spadix, the spathe being a leaf-like structure curving over the club-like spadix. In the fall, the cluster of deep red berries are very apparent in the woodlands.

The bulb of both species contain concentrations of calcium oxalate, which, if tasted, causes a severe stinging sensation on the mouth and tongue.

It ranges across all of northeast United States and is still fairly common in Iowa woodlands. It seems responsive to the acidity of the soil, which may cause the spathe color to vary from green to brown or purple.